

What Is Claimed Is:

1. A solid support for solid phase synthesis of a combinatorial library of organic compounds, wherein the solid support comprises polystyrene bound selenium.
2. A solid support having the formula $PS\text{-Se-B(OR)}_3\text{M}^+$, wherein PS is polystyrene; R is $C_1\text{-}C_6$ alkyl; M is Li, Na, K, Zn or Cs.
3. A solid support according to claim 2, wherein R is ethyl.
4. A solid support according to claim 2, wherein M is Na.
5. A process for preparing a solid support according to claim 1, wherein the process comprises the steps of:
 - a) lithium-bromine exchange of bromopolystyrene with BuLi;
 - b) suspension in a non-protic solvent and treatment with selenium, wherein the polar non-protic solvent is selected from the group consisting of dimethoxyethan, diethylether, THF, toluene or dioxane, and
 - c) treatment with $M^{n+}(BH_4)_n^-$ in ROH.
6. The process of claim 5, wherein said polar non-protic solvent is THF.
7. A method for synthesizing organic compounds on a solid support according to claim 1, wherein the solid support comprises polystyrene bound selenium and the method comprises the steps of:
 - a) attachment by direct loading to the solid support of a compound of formula $R^1R^2R^3CX$, wherein X is a halogenide or a substituted alkyl or aryl sulfonate; R^1 , R^2 and R^3 are the same or different and are hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted arylalkyl, optionally substituted heteroarylalkyl, optionally substituted

heterocyclic, optionally substituted heteroalkyl, optionally substituted heterocyclicalkyl or optionally substituted alkylheteroalkyl, provided that at least one of R¹, R² and R³ is not hydrogen;

b) additional modification of the R¹, R² or R³-groups by a synthesis sequence comprising one or more reactions being compatible with aryl alkyl selenides;

c) cleavage with formation of aliphatic C-H bond on final compound of formula R¹R²R³CH wherein R¹, R² and R³ are the same or different and are hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted arylalkyl, optionally substituted heteroarylalkyl, optionally substituted heterocyclic, optionally substituted heteroalkyl, optionally substituted heterocyclicalkyl or optionally substituted alkylheteroalkyl; and

d) optionally purification by solid phase extraction.

8. The method of claim 7, wherein said organic compounds are a combinatorial library of compounds.

9. The method of claim 7, wherein the cleavage step of step (c) is a radical homolysis with trialkyl stannanes and a radical initiator.

10. The method of claim 9, wherein said radicial initiator is AIBN.

11. A method for synthesizing organic compounds on a solid support according to claim 1, wherein the solid support is polystyrene bound selenium and the method comprises the steps of:

a) attachment by direct loading to the solid support of a compound of formula XCR¹R²-CHR³R⁴, wherein X is a halogenide or a substituted alkyl or aryl sulfonate; R¹, R², R³ and R⁴ are the same or different and are hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl, optionally substituted alkenyl,

optionally substituted alkynyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted arylalkyl, optionally substituted heteroarylalkyl, optionally substituted heterocyclic, optionally substituted heteroalkyl, optionally substituted heterocyclicalkyl or optionally substituted alkylheteroalkyl, provided that at least one of R¹, R², R³ and R⁴ is not hydrogen;

b) additional modification of the R¹, R², R³ and R⁴ -groups by a synthesis sequence comprising one or more reactions being compatible with aryl alkyl selenides;

c) cleavage under oxidative condition under β -elimination process on final compounds of the general structure CR¹R²=CR³R⁴, wherein R¹, R², R³ and R⁴ are the same or different and are hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted arylalkyl, optionally substituted heteroarylalkyl, optionally substituted heterocyclic, optionally substituted heteroalkyl, optionally substituted heterocyclicalkyl or optionally substituted alkylheteroalkyl; and

d) optionally purification by solid phase extraction.

12. The method of claim 11, wherein said organic compounds are a combinatorial library of compounds.

13. The method of claim 11, wherein the cleavage of step c) is a oxidation with sodium periodide, H₂O₂ or m-CPBA.

14. A method for synthesizing organic compounds on a solid support wherein the solid support comprises polystyrene bound selenium.